

(12)特許協力条約に基づいて公開された国際出願

(19)世界知的所有権機関
国際事務局(43)国際公開日
2004年3月4日 (04.03.2004)

PCT

(10)国際公開番号
WO 2004/018850 A1

(51)国際特許分類7: F01N 3/08, 3/02, 3/24

(21)国際出願番号: PCT/JP2003/010751

(22)国際出願日: 2003年8月26日 (26.08.2003)

(25)国際出願の言語: 日本語

(26)国際公開の言語: 日本語

(30)優先権データ:
特願2002-244502 2002年8月26日 (26.08.2002) JP

(71)出願人(米国を除く全ての指定国について): 株式会社日立製作所 (HITACHI, LTD.) [JP/JP]; 〒101-8010 東京都千代田区神田駿河台四丁目6番地 Tokyo (JP).

(72)発明者; および

(75)発明者/出願人(米国についてのみ): 上川 将行 (KAMIKAWA,Masayuki) [JP/JP]; 〒319-1221 茨城県日立市大みか町七丁目2番1号 株式会社日立製作所電力・電機開発研究所内 Ibaraki (JP). 飯塚

秀宏 (IZUKA,Hidehiro) [JP/JP]; 〒319-1221 茨城県日立市大みか町七丁目2番1号 株式会社日立製作所電力・電機開発研究所内 Ibaraki (JP). 金枝 雅人 (KANEEDA,Masato) [JP/JP]; 〒319-1221 茨城県日立市大みか町七丁目2番1号 株式会社日立製作所電力・電機開発研究所内 Ibaraki (JP). 東山 和寿 (HIGASHIYAMA,Kazutoshi) [JP/JP]; 〒319-1221 茨城県日立市大みか町七丁目2番1号 株式会社日立製作所電力・電機開発研究所内 Ibaraki (JP). 北原 雄一 (KITAHARA,Yuichi) [JP/JP]; 〒312-8503 茨城県ひたちなか市高場2520番地 株式会社日立製作所オートモティブシステムグループ内 Ibaraki (JP). 黒田 修 (KURODA,Osamu) [JP/JP]; 〒312-8503 茨城県ひたちなか市高場2520番地 株式会社日立製作所オートモティブシステムグループ内 Ibaraki (JP).

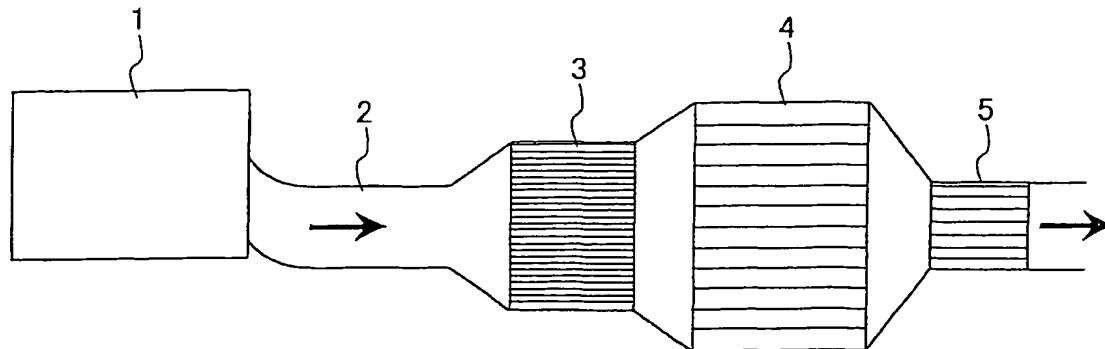
(74)代理人: 平木 祐輔 (HIRAKI,Yusuke); 〒105-0001 東京都港区虎ノ門一丁目17番1号 虎ノ門5森ビル3階 Tokyo (JP).

(81)指定国(国内): JP, US.

/続葉有

(54) Title: APPARATUS AND METHOD FOR CLARIFYING EXHAUST GAS OF DIESEL ENGINE

(54)発明の名称: ディーゼルエンジンの排気ガス浄化装置および排気ガス浄化方法



WO 2004/018850 A1

(57) Abstract: An apparatus for clarifying an exhaust gas of a diesel engine, characterized in that it has an NO_x adsorption and reduction type catalyst and a diesel particulate filter for oxidizing and removing particulate matters in the exhaust gas, which are provided in the flow route for the exhaust gas and are arranged in the above described order from the upstream of the flow of the exhaust gas. The above arrangement allows the elevation of the temperature of the catalyst with ease and the precise control of the temperature and atmosphere therein, resulting in the achievement of satisfactory NO_x clarification performance, and the employment of the NO_x adsorption and reduction type catalyst allows the enhancement of the rate of reduction of the NO₂ captured, which shortens the time to keep a stoichiometric-rich atmosphere to a time of several seconds to several minutes.

(57) 要約: ディーゼルエンジンの排気ガス流路に、排気の流れの上流から、NO_x吸着還元型触媒、排気ガス中の粒子状物質を酸化除去しめるディーゼルパティキュレートフィルタを順に設置する。このように配置することで、触媒温度が上がりやすくなり、また温度及び霧囲気の精密な制御が可能になるため、十分なNO_x浄化性能を得ることができるようになり、しかも、NO_x吸着還元型触媒の使用により、捕捉NO₂の還元速度が速く、ストイキ～リッチ霧囲気を保持する時間を数秒～数分に短縮することができる。



(84) 指定国(広域): ヨーロッパ特許(AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).

2文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

添付公開書類:

- 國際調査報告書

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/10751

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ F01N3/08, F01N3/02, F01N3/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl⁷ F01N3/08, F01N3/02, F01N3/24, F01N3/28Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2003
Kokai Jitsuyo Shinan Koho 1971-2003 Toroku Jitsuyo Shinan Koho 1994-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| X | JP 2002-129950 A (Toyota Motor Corp.), 09 May, 2002 (09.05.02), Fig. 1 (Family: none) | 1,11 2-10 |
| Y | JP 3-74561 A (Mazda Motor Corp.), 29 March, 1991 (29.03.91), Full text; Fig. 1 (Family: none) | 2-5, 9 |
| Y | Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 400702/1990 (Laid-open No. 87332/1992) (Mitsubishi Motors Corp.), 29 July, 1992 (29.07.92), Full text; all drawings (Family: none) | 2-5, 9 |

 Further documents are listed in the continuation of Box C. See patent family annex.

| | |
|---|--|
| * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family |
|---|--|

| | |
|---|--|
| Date of the actual completion of the international search 02 December, 2003 (02.12.03) | Date of mailing of the international search report 16 December, 2003 (16.12.03) |
| Name and mailing address of the ISA/ Japanese Patent Office | Authorized officer |

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/10751

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| Y | JP 2001-50033 A (Hitachi, Ltd.), 23 February, 2001 (23.02.01), Column 2, lines 5 to 15; Par. No. [0070] (Family: none) | 6-8,10 |